—AIMS—

**Assessing the Impact of
Microenterprise Services (AIMS)**

Management Systems International
600 Water Street, S.W.
Washington, D.C. 20024-2488
Tel: (202) 484-7170 $ Fax: (202) 488-0754
E-mail: aims@msi-inc.com

A REVIEW OF APPROACHES FOR MEASUREMENT OF MICROENTERPRISE AND HOUSEHOLD INCOME

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Submitted to:

Monique Cohen, Ph.D.
Office of Microenterprise Development
Economic Growth Center, Global Bureau
USAID

Submitted by:

Anne Inserra
Management Systems International

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FOREWORD

The Assessing the Impact of Microenterprises (AIMS) Project seeks to gain a better understanding of the processes by which microenterprise programs strengthen businesses and improve the welfare of microentrepreneurs and their households. In addition, it focuses on strengthening the ability of the U. S. Agency for International Development (USAID) and its partners to measure the results of their microenterprise programs. The project's core agenda includes desk studies, focused field research, three major impact assessments, and the development and testing of tools for use by private voluntary organizations and non-governmental organizations to track the impacts of their microenterprise programs. Further information about this USAID-funded project and its publications is available on the AIMS home page (http:\\www.mip.org).

This paper is one in a series of desk studies that addresses specific substantive and methodological issues. The studies are intended to inform the design and implementation of the focused field research, the three core impact assessments and the tools. Each core impact assessment will focus on a specific microenterprise program. Information will be obtained from program participants and a comparable group of non-participants in two main rounds of data collection, with a two year interval between the rounds. Complementary information will be gathered in qualitative interviews and from secondary sources. While this paper furthers the agenda of the AIMS Project, it is also intended to be of interest to others seeking to understand and document the impacts of microenterprise programs.

Carolyn Barnes
AIMS Project Director

ACKNOWLEDGMENTS

EXECUTIVE SUMMARY

This USAID supported study presents a review of selected methods for measuring income at both the level of the microenterprise and the household that can potentially be used to assess the impact of microenterprise services. The background study served as an input to a process of determining whether and how income should be included as an impact category in the core field impact assessments of the Assessing the Impact of Microenterprise Services (AIMS) Project. It was prepared as a resource for a moderated discussion of experts who participated in a virtual meeting via the Internet to discuss the options and make recommendations on how income should be handled in the AIMS core impact assessments. The background paper is based on a review of selected literature on measurement of income at the microenterprise and household levels, primarily in the developing country context. Alternative measures of household wealth and economic well-being to income are also discussed. Each approach is reviewed in terms of major strengths and weaknesses, including accuracy and reliability of data that can be collected, cost and practical feasibility of implementing the method, and usefulness for assessing the issue of fungibility of capital between the assisted enterprise and other household uses.

Importance of Income as an Impact Variable

Income is regarded as a critical variable for measuring the impact of microenterprise credit services on both the assisted enterprise and the household. Income is a general indicator of enterprise stability or growth, and an important indicator of household welfare and poverty status. Long run increases in income contribute to an improved quality of life, because income provides the means to obtain improved nutrition, health, education, and overall socioeconomic status. Income can be defined as the monetized value of the flow of goods and services. Income for productive activities is often measured as net income, or inflows minus variable and fixed costs (also known as profits). Household income is often conceptualized within an accounting framework, and consists of the sum of inflows from all sources, including wage income, net income from entrepreneurial and farming activities, rental income, remittances received, government transfers, investment income, gifts, and other. Income is a flow variable that is defined in terms of a specific time period, usually a year.

Income is extremely difficult to measure accurately and reliably. One problem affecting income measurement is that income is the sum or product of multiple data points, and there can be great variation in terms of which components of income are included in the measurement. This limits the comparability of data. It can be difficult to identify and value in-kind flows. Income can be perceived as sensitive information by respondents, resulting in deliberate mis-reporting or non-response. Capital is fungible within the household, which makes it difficult to attribute flows to the correct sources within the household and accurately calculate income. Collecting accurate data on a flow variable is more difficult than collecting accurate data on a stock variable like

assets, which can be measured at one point in time. Income flows tend to vary greatly within or between time periods due to regular factors such as seasonal changes, or irregular factors like extreme weather patterns. Because of these fluctuations, many experts recommend collecting income data through a frequent, multiple visit approach which can be very costly to implement. Most methods for measuring income are based on respondent recall of relevant data, and are typically subject to considerable inaccuracy and distortion due to recall errors.

Approaches to Measuring Microenterprise and Household Income

The paper reviews a number of selected approaches to measuring income. Some of the approaches are based on proxy indicators or alternative measures of household economic well-being. The approaches are classified into the broad categories of simpler, middle range, and more complex.

Simpler Approaches

A number of simple techniques are described: gathering non-quantitative data on the existence, direction, or relative amount of change in microenterprise or household income; using existing financial records for microenterprises; collecting general qualitative information on the income of microenterprises or households; and conducting a wealth ranking exercise to provide an alternative indication of household income levels. Principal strengths and weaknesses of each approach are described.

Middle Range Approaches

The benefits and disadvantages of several middle range approaches are described. One approach involves asking respondents to provide self-reported recalled information on total income for microenterprises or households. For the microenterprise, an alternative is to ask the respondent to provide total figures for revenues separately from costs. Techniques for dealing with seasonal and other fluctuations in the income flow variable are described, with a frequent, multiple visit survey approach identified as the most effective way to deal with fluctuation. The standard cost structure method for estimating microenterprise income is also assessed. Assets are identified as a potentially useful alternative measure of household economic status. Wealth scores, which are based on verifying whether households own a set of selected, observable assets, are also described.

More Complex Approaches

Collection of detailed, self-reported recalled information on the separate components of income is a more complicated technique that can be used to assess microenterprise or household income. Direct observation of the various sources and components of income is another intensive approach that can be used to collect microenterprise or household income data. Expenditure data can be used to measure household consumption, which can serve as an alternative measure of household economic status. A final approach involves collecting data on microenterprise income

and using it as a proxy for total household income. The strengths and weaknesses of these more complex approaches are described in detail.

Conclusion

A variety of different techniques have been developed to measure microenterprise and household income. Some approaches are based on use of alternative variables to household income. No single approach seems able to overcome all of the constraints that affect measurement of the economic status or well-being of the microenterprise or household. There seems to be a trade off in terms of the relative cost of implementing an approach, and the degree of detail and accuracy of data produced as a result on the other. More sophisticated and complex approaches involve collection of primary data at a more detailed level and involve more refined analyses of primary data. These approaches are more expensive to implement, but may produce more accurate quantitative data on economic welfare. The most widely used approaches rely on recall of income and other flow data, which involves serious constraints. Numerous studies recommend using more than one approach to gather information on changes in income of microenterprises or their households. Collection of qualitative information is often recommended as a valuable way to complement and verify quantitative data.

The final selection of the approach for measuring the impact of microenterprise services on microenterprise and household income for the AIMS core impact assessments will depend on a variety of factors. Income is a powerful indicator of microenterprise and household economic status. However, additional variables that track different dimensions of household economic welfare also exist, and it may be easier to collect accurate data for these alternatives. Household income should be evaluated in relation to alternative variables, such as expenditures and assets. The final selection of the economic status impact variable(s) and measurement approach(es) for the AIMS core impact assessments should be based on the following criteria: the extent to which the approach can produce accurate and reliable data on income or an acceptable alternative economic impact indicator, the relative cost of the approach, and the extent to which the method is compatible with the data collection approaches recommended for the other critical impact variables to be used in the AIMS core impact assessments.

A REVIEW OF APPROACHES FOR MEASUREMENT OF MICROENTERPRISE AND HOUSEHOLD INCOME

I.   INTRODUCTION

A.   PURPOSE OF BACKGROUND PAPER

The purpose of this background paper is to review selected methods for measuring income at both the level of the microenterprise (ME) and the household that can potentially be used to assess the impact of microenterprise services. The background study served as an input to a process of determining whether and how income should be included as an impact category in the core impact assessments (CIAs) of the Assessing the Impact of Microenterprise Services (AIMS) Project.[1]

This background paper is based on a review of selected literature on measurement of income at the microenterprise and household level, primarily in the developing country context. Proxy measures for household income and alternative economic impact variables are also discussed. The resources that were reviewed included actual impact studies and practical manuals for collecting data on income and the alternative measures of welfare, as well as assessments of the relative merits of various measurement approaches. The paper is not intended to be comprehensive but to present brief information on a selected range of options.

The paper begins with an introduction to some conceptual issues relating to the importance of income as a variable in studying the impact of microenterprise assistance programs, followed by a discussion of major problems and constraints that affect income measurement at a more practical level. A series of potential options for collecting information on income and selected alternative measures of economic well-being is then presented. The strengths and weaknesses of each option are described, with attention to the issues of the accuracy and reliability of the data that can potentially be collected using the approach, as well as the operational feasibility of the approach, particularly the relative requirements in terms of time, expertise and cost. Special attention is paid to the effectiveness of each method in dealing with the issue of the fungibility of capital between the assisted enterprise and the household, and among various household uses. The methods are discussed in approximate order ranging from simpler methods to more complex ones.

B.   IMPORTANCE OF INCOME AS AN IMPACT VARIABLE

Income is recognized as a critical variable for measuring the impact of microenterprise credit services on both the assisted enterprise and the household. Income is regarded as a general indicator of enterprise stability or growth. Income is also a critical indicator of overall household economic security, where it is used to assess changes in household welfare and poverty status as defined in terms of material needs (Hulme and Mosley forthcoming, vol. 1). Income provides the resources for household consumption and in a sense provides an indication of potential future consumption (Snodgrass, personal communication [pers. com.] 1996b). Long run increases in income contribute to an improved quality of life, because income provides the means to obtain improved nutrition, health, education, and overall socioeconomic status. While income can be defined at the macro or national level, as well as the individual level, the concept used in this paper refers to the micro level of the microenterprise and household. (See especially Kumar 1989.)

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[1]This background study was prepared as a resource for a moderated discussion of experts who participated in a virtual meeting via the Internet to discuss the options and make recommendations on how income should be handled in the AIMS core impact assessments.

At the simplest conceptual level, income at the enterprise or firm level is the value of production, or the value of income generated by productive activity (Snodgrass, pers. com. 1996b). Income from productive activities (including microenterprises) is usually measured as **net income**, or inflows from sales of goods or services minus variable and fixed costs.

Household income is conceptualized and measured differently from enterprise income. At the simplest level, households can be modeled as purely consuming units, not as producing units. In this model, household income can be defined as the sum of payments received by the household for the factors of production that are supplied to producing firms (labor, capital, and land), and is measured as **gross income**. In this model, household income can be used for consumption or saving, which sets up a simple accounting identity of household income equals consumption plus savings. However, a model of the household as a purely consuming unit is recognized to be overly simplified, since households do in fact engage in productive activities (Snodgrass, pers. com. 1996b). A household current or consumption account framework, based on the accounting identity of income = consumption plus savings, can be used to measure household income within a conceptual model that recognizes the multiplicity of household activities, including productive activities. In this type of treatment, household income is derived as the sum of inflows from all sources, and can include wage income, net income from entrepreneurial and farming activities, rental income, remittances received, government transfers, investment income, gifts, and so on (Johnson et al. 1990). As will be explained later, the definition of household income can vary considerably, depending on the extent to which flows arising from non-marketed goods produced by household members or use of household assets and endowments are included.

In the conceptual framework and strategy papers for the AIMS research, changes in microenterprise income are conceived of as an indirect impact of microenterprise credit.[2] Credit must first be used to increase investment or the productivity of investment in the enterprise, which in turn can contribute to increases in enterprise income. Microenterprise income may be increased by improvements in productivity or market relationships, diversification of products, or increased scale of the enterprise. Increased enterprise income in turn is a means to increase the enterprise or household resource base (physical, financial or human resources), and to undertake household consumption, investment, and production activities. Microenterprise income is a source of total household income. Microenterprise credit may also have an immediate effect on the household by providing cash resources for consumption expenditures or through substitution effects.

The conceptual framework underlying the research approach of the AIMS Project includes the concept of the microenterprise as an integrated part of the wider portfolio of household production, consumption, savings, and investment activities. In this framework, households make decisions with regard to microenterprises by considering them in terms of their effects on the

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[2]The conceptual framework for the AIMS core impact assessments includes hypothesized relationships of credit to impacts on the income of the microenterprise and the microentrepreneur's household. Annex B contains a list of the preliminary hypotheses that were developed for the CIAs. For more information on the conceptual framework and preliminary hypotheses see the following: Sebstad et al., 1995, *Assessing the Impacts of Microenterprise Interventions: A Framework for Analysis*; Microenterprise Impact Assessment Consortium, 1996, **A** Core Impact Assessment Strategy for the Microenterprise Impact Project@ (internal working paper); Dunn, 1996, **A** Hypotheses for the Core Impact Assessments@ (internal working document); and Barnes and Sebstad, 1996, **A**Scope of Work: AIMS Focused Field Research@ (internal working document).

overall household economic portfolio. Microenterprises rely on households for at least part of their capital, labor and other input requirements, and in turn generate income that may be used for household consumption, production, savings or investment in assets. In this model, microenterprise activities can be thought of as subsets of the total portfolio of household income generating activities. The relationship of the microenterprise to the overall household portfolio, and the fungibility of monetary resources which may move between and among the microenterprise and broader household spheres, complicate the collection and interpretation of data on income changes for the enterprise and household. This fungibility of financial resources suggests that the study approach for an impact assessment of microenterprise services should be designed to gather information on changes in total household income, as well as changes in the income of the microenterprise or microenterprises run by the household members.

To some extent, it may also be relevant to attempt to study information on individual income levels within the household. It is widely accepted that the household is not a homogeneous entity. In the analytical approach recommended for the AIMS core impact assessments, the household is conceptualized as a system of separate individual decisions and activities.[3] While methods for gathering information on individual income are not a focus of this background paper, some of the approaches described below involve collecting data on individual levels of income within the household.

Given the practical difficulty of collecting accurate information on income, as is elaborated in the next section, a key question to be resolved for the AIMS research design is to determine the relative utility of using income as a key impact variable for economic status, as opposed to alternative measures of household wealth or economic well-being. As will be explained below, income is a flow variable that reveals important aspects of the economic performance of the microenterprise or wealth of the household. As a flow variable, it is defined in terms of a period of time. While potentially any length of reference period may be used, a year interval is often the standard for income measurements. Theoretically, lifetime income might provide the most accurate picture of welfare. Because income fluctuates over time, income measured for a shorter time period may not be representative of lifetime or longer term income. However, measuring lifetime income is not feasible (Snodgrass, pers. com. 1996b).

Household consumption, as measured by expenditures, is another flow variable that can be used as an alternative measure of household welfare. While income represents potential future consumption, household consumption tracks the total quantities of goods and services actually consumed or used by the household, and so may provide a more accurate assessment of a household's standard of living. Consumption is less variable because it reflects the household's ability to smooth changes in income through adjusting savings and dissavings. The permanent income hypothesis posits that people consume 100 percent of their **A**permanent income@. This

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[3]See *Household Economic Portfolios*, by Marty Chen and Elizabeth Dunn, 1996, for a full discussion of the household and intra household portfolio models recommended as an analytical approach for the AIMS field impact assessments.

hypothesis can be used to argue that a measure of consumption for a given time interval can provide a better measurement of permanent income, and therefore a better sense of lifetime income, than can a measure of household income for a comparable time period (Snodgrass, pers. com. 1996b). Household assets, on the other hand, are a stock variable that reveal another dimension of wealth at a single point in time. Assets represent sources of potential future income and provide useful information about the long-term economic status of the household. It can be argued that net worth, (the value of household assets minus household liabilities), is a more useful measure of household welfare than just assets (Snodgrass, pers. com. 1996b). The relative strengths of these different measures of economic welfare, and the relative costs of gathering accurate data for them, should be important factors in the final determination of whether income and/or an alternative measure of household economic status should be used in the AIMS core impact assessments.

C.   DIFFICULTIES ENCOUNTERED IN MEASURING INCOME

Despite the conceptual utility of income as a measure of microenterprise and household economic well-being, it is extremely difficult to measure at a practical level. The following characteristics affect the accuracy, reliability, and comparability of data collected on income. To the extent possible, the review of the possible methods for measuring income in the next section addresses the extent to which the various approaches deal effectively with these constraints.

C   **multiple ways to define and derive income** - Income can be defined and derived in various ways, depending on what elements are included. A simple, general definition of income is the monetized value of the flow of goods and services (Kumar 1989). Income is a flow variable (see below) that is usually measured in terms of an annual period. As explained earlier, income for productive activities (including microenterprises) is often measured as **net income**, or inflows minus variable and fixed costs, also known as net profits or just profits.[4] Household income is often measured within a household current or consumption account framework, where it is derived as the sum of income from all sources, including wage income, net income from entrepreneurial and farming activities, rental income, remittances received, government transfers, investment income, gifts, and so on (Johnson et al. 1990).[5]

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[4]*Gross income* is an alternative definition of microenterprise income used in some studies. Gross income can be defined as sales revenues minus only the costs of goods sold (fixed costs are not subtracted). The attraction of using this definition is that fixed costs are more difficult to derive from an interview. If fixed costs are a relatively small portion of costs, which tends to be true for many microentrepreneurs, the assumption is that the resulting estimate for gross income should be a reasonable proxy indicator for net income. However, gross income does not indicate the profitability of the enterprise. Another alternative is to use *cash income*, defined as total cash inflows minus total cash outflows. This indicator is attractive because it does not involve trying to estimate unpaid labor costs, and it shows the liquidity or solvency of the enterprise and the potential impact of the enterprise on the household. However, it cannot indicate the true financial viability of the microenterprise. (See Goldmark and Rosengard 1985, 205.)

[5]Even within this household accounting framework, there is some variation in whether some inflow sources are labeled as income or not. Some researchers, for example, may treat transfers separately from household income. In the framework, the difference between total household income and total household expenditures is household savings during that period. Note that *net* income from farming and non-farm income generating activities is included in total household income -- the associated variable and fixed costs of the farming and entrepreneurial activities have been subtracted out.

In practice, there is considerable variation in terms of which categories of inflows get included in measurements of income, and in the case of net income, which specific elements of cost are accounted for. A good deal of this variation seems to depend on the extent to which the value of in-kind inflows (and costs) are monetized and accounted for (Kumar 1989). For example, when deriving net income for microenterprises, if the costs of unpaid labor are not subtracted from inflows, the resulting net income in fact represents returns to unpaid labor. Accounting for fixed costs such as the cost of investment can be particularly important in deriving microenterprise net income (Leones and Rozelle 1991).

Similarly, household income measurement can vary depending on whether flows arising from non-marketed goods produced by household members through hunting, fishing, or gathering fuelwood, fodder, wild food products or even water, are valued and included. A problem with including such flows can be the difficulty of determining the value of the outputs that result from these activities, particularly if markets do not exist for the products.[6] A further source of variability that can affect measurement of household income is the extent to which values are assigned to the flows that arise from the use of assets and endowments of the household. Some complex treatments based on the concept of *full income* impute values for these flows, including housing and even time of household members (Grootaert 1982). An example would be including the imputed rental value of owner occupied housing in household income. If time of household members is valued, then the imputed value of such household maintenance activities as meal preparation, washing clothes, or child care might be included in household income. Obviously, data collection and analysis based on the full income concept is extremely complicated. Most of the approaches presented in this paper for analyzing household income do not include the value of such non-marketed services provided by one household member for another.[7]

Total income for both the microenterprise and the household is a quantity that is derived from other data (Leones and Rozelle 1991). Income is the sum or product of various data points. For example, total household income is the sum of earnings from different sources. The value of earnings from each source is in turn derived, and the method of calculation that must be used for each inflow source may vary considerably from source to source. Wage earnings may be calculated as the product of hours worked times the wage per hour, while inflows from agricultural production may be derived as the product of the number of units sold times the market price per unit. Income is not a discrete phenomenon that can be directly measured, and instead results from measuring and making calculations on other data points. (A respondent can be asked a direct question about total income, but s/he must make the various calculations internally in order to provide the answer.)

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[6]Some studies determine whether to include such flows in household income measurement based on the criterion of whether or not the household would otherwise have to purchase the good. Thus, for example, fuelwood gathering might get included, but water collection probably would not.

[7]See Johnson et al. 1990, pp. 4-6, for a discussion of non-marketed goods and services.

For both microenterprises and households, studies that track income use a variety of different definitions and methods for deriving income. The numerous options used tend to limit the comparability of income data across different studies. Regardless of which option is selected for a particular study, it is imperative that a precise definition and method of calculation be specified for income before data are collected. Using imprecisely defined concepts or not communicating these concepts clearly to respondents can decrease the accuracy and reliability of data collected. The response rate can also be affected if respondents do not correctly understand exactly what information is being requested (Sebstad, pers. com. 1996b).

C   **multiple sources and forms of income** - As explained above, poor households typically have a wide range of income sources ranging from enterprise activity, wage income, commercial and subsistence agriculture and livestock raising, exchange labor, hunting and gathering, rental income, interest on investments, gifts, remittances, and transfers. Even microenterprises may have multiple sources of production and income (Hulme and Mosley forthcoming, vol. 1). In order to estimate total household or enterprise income, it is necessary to gather information on all of the sources, although it may not be easy to identify all of them. The cost and complexity of collecting data on multiple items can be very high. As mentioned above, income for both households and microenterprises can be both cash and in-kind. Deriving values for in-kind income can be difficult. Finally, multiplicity of products or services offered by a microenterprise can make it difficult to estimate total enterprise income using such approaches as those that derive totals based on average cost, production, price or sales data for key enterprise products or services.

C   **sensitivity of information** - Income is typically regarded as confidential information. Respondents may be inclined to respond inaccurately or to refuse to respond to direct questions on microenterprise or household income. Reasons for sensitivity can include the desire to avoid taxation, social or cultural norms that discourage income disparities or stress obligations to share income increases with relatives (Goldmark and Rosengard 1985), a desire to appear to be better off (this **A**prestige effect@ may tend to affect relatively poorer households more), or reluctance to report illegal income generating activities such as home beer brewing or prostitution. The sensitivity of information on income can result in nonsampling error (Feinstein 1993). Because of this, many approaches advocate estimating income indirectly from other data, or collecting information on sub components of income separately, instead of asking for total income information directly. Other approaches involve collecting information on income through in depth, qualitative research (Feinstein 1993).

C   **fungibility of capital** - Capital is fungible. Fungibility of financial resources within the household can make it difficult to attribute flows to their appropriate sources, and to accurately calculate income. This can make it particularly difficult to determine the net income of a microenterprise activity run by the household. Because the microenterprise is one source of total household income, costs and inflows for the microenterprise may be mixed with other financial resources of the household. Microenterprise income may be

used by the household to reinvest in that enterprise or in other household enterprise activity, or for household consumption or investment. On the cost side, households may use credit funds intended for a specific enterprise for alternative uses. This makes it difficult to determine how much, if any, of the costs of the credit should be attributed to the microenterprise activity. The fungibility issue makes it necessary to collect information on the income of the entire household economic portfolio in order to accurately determine the full impact of microenterprise services. (See Goldmark and Rosengard 1985.)

C   **income is a flow variable** - Income is a flow variable that is defined in terms of a specific time period. Collecting accurate data on a flow variable is more difficult that collecting accurate data on a stock variable, such as assets, which can be measured or observed at one point in time. The accuracy of an estimate for an income flow variable can depend on many factors, including whether or not accurate written records are kept, the length of the time period involved, and the frequency of observations made during the time period (see recall below). Income also fluctuates over time, which can affect the accuracy of income estimates, and the extent to which an income measurement for a particular time period accurately reflects longer term welfare (see fluctuations below).

C   **fluctuations in income flows** - As explained above, income flows may vary widely during a defined time period or between time periods. Fluctuations in income levels over time mean that income measurements for shorter time periods may not provide an accurate picture of longer term welfare (Snodgrass, pers. com. 1996b). Fluctuations may be caused by regular or structural factors such as seasonal changes; irregular or crisis factors such as drought or other natural disasters, exogenous macroeconomic factors, or family problems such as illness or death; or simply by the high amount of daily or weekly variation that seems to be inherent to small enterprise activity and household income. Seasonality effects on enterprise income may be caused by such factors as crop growing seasons, changes in labor supply, or social or religious calendar events, and tend to affect different enterprise subsectors differently (Sebstad and Walsh 1991). Income is usually collected for a year cycle in order to try to account for the effects of seasonal fluctuations. In order to obtain the most accurate annual figure, panel data on the subject can be collected at frequent and regular intervals throughout an entire annual cycle. At the least, before and after data should be collected during the same season, to avoid differential seasonal effects on income levels. It is much more difficult to control for the effects of unusual or irregular exogenous factors that affect income flows. There seems to be consensus that, given the problems of variation and recall (see below) that affect a flow variable like income, more accurate data can be obtained from using a multiple visit survey approach that collects data for shorter time periods than from a one-visit approach that

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[8]Liedholm describes two studies that collected input and output data for small firms two times a week for a year. At the end of the survey period respondents also were asked to estimate total annual figures for the variables. The annual estimates were found to differ considerably (Liedholm 1991).

asks respondents to estimate income over a longer time interval.[8] The ideal frequency required to collect data may vary with the specific variable. For example, it may be possible to collect accurate data for expenditures or inputs on a weekly or monthly basis, while output or sales data may need to be collected more frequently. (See especially Liedholm 1991.)

C **real value of income** - Because income is a flow variable that pertains to more than one moment in time, and because the current value of financial resources changes over time due to inflation, it is necessary to convert all nominal financial data to real terms before calculating the income earned during a time period, or comparing income figures from different time periods. A common method for converting monetary figures from current prices and values to real terms is to deflate the amounts, using the difference between the inflation rates affecting the national currency and the US dollar. However, it can be difficult to identify an accurate estimate of the local inflation rate affecting the target poor population (Hulme and Mosley forthcoming, vol. 1).

C **lack of written records** - Most microenterprises do not keep complete written financial records. The same is true for the households of microentrepreneurs. This makes it necessary to estimate or derive income by using alternative mechanisms that almost certainly cannot be as reliable and accurate as complete financial records could be. In the absence of written records, it is extremely unlikely that a microentrepreneur or household member will know exact amounts for income.

C **recall of income data** - Aside from approaches that rely on written records or direct observation, methods for measuring income most often depend on respondent recall. Recall data are subject to inaccuracies and distortions due to a number of different types of non-sampling (measurement and response) errors. The length of time between the actual event and the act of recall affects the quality of information collected. In addition, evidence suggests that errors in reporting are directly related to the length of the recall or reference period, and that errors due to memory tend to increase with the length of the reference period (Liedholm 1991). Because the greatest accuracy with memory occurs when the item can be measured on the same day as the interview, data on stock variables such as assets or number of workers that reflect the status of the variable on that same day might be recalled relatively more accurately than flow data like income (Liedholm 1991). Some studies argue that errors due to recall need not present an insurmountable problem, because it is assumed that the inaccuracies caused by recall will be random and so will not interfere with the statistical analysis. Bias due to memory problems would only be an issue if different study groups were affected differently (Bolnick 1982a).

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[8]Liedholm describes two studies that collected input and output data for small firms two times a week for a year. At the end of the survey period respondents also were asked to estimate total annual figures for the variables. The annual estimates were found to differ considerably (Liedholm 1991).

The significance of items being recalled, and the regularity and frequency with which those items occur, also affect the length of the ideal recall period. For example, an infrequently occurring event tends to be remembered individually. Memory for regularly occurring events also tends to be relatively good, although if the regularly occurring event varies widely from event to event, (such as daily sales amounts), it is difficult to remember the individual events accurately.

As mentioned above, there seems to be consensus that a frequent visit survey approach that requests information for short reference periods will provide more accurate recall data for income and related flow variables than a one time visit that requests annual information (Liedholm 1991; Casley and Lurey 1981).[9]

C **different methods of measuring income for different enterprise types** - Some methods require that different approaches be used to measure income for different types of enterprises. For example, approaches that involve deriving income figures from estimates of the costs of production, sales price per product or unit, and/or volume of production may need to be adapted for enterprises producing different types of services or products. Some approaches require that income be derived differently for production and trading or service microenterprises.

C **gender differences** - Women=s off-farm incomes may be more difficult to measure than

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[9]Using a shorter reference period but not repeating the data collection through multiple visits may bring some trade offs for both infrequent and regular event recall. Use of a very short recall period for a one time survey means that there is a greater likelihood that an infrequently occurring event will fall outside the reference period and be excluded from the response, and that the resulting mean for the population will be of poor quality. On the other hand, use of a shorter reference time interval in a one shot survey to collect information on frequent, every day events that vary widely from day to day may result in a higher variance for the estimated population mean. As an alternative, using a longer reference period such as a year for frequently occurring, highly variable data and asking the respondent to estimate average values over that period would tend to introduce more bias. Even if not asked to provide averages, respondents may attempt to estimate the total by using an average value for sub-units of time during that period, instead of recalling specific values for each sub-interval and then aggregating them. While this may introduce some error, it may also be more accurate than trying to collect more specific data that would tend to suffer from Afalse precision@ due to memory problems. (See Casley and Lurey 1981 and Little et al. 1989.)

It is also advisable to specify exact beginning and ending points for the reference period. Simply using Athe previous month@ for the recall period brings the danger of telescoping and end effects, which are recall errors in which items are incorrectly moved into or out of the actual reference period. For example, a sale made on the first day of the next month may be incorrectly recalled as having occurred during the previous month (Casley and Lurey 1981). If the research design involves at least a second round of data collection, the recall period can be delimited on one end by the last visit of the interviewer (Asince my last visit@), and on the other end by the current interview date (Little et al. 1989). Note, however, that delimiting the start of the reference period by referring to the A interviewer=s last visit@ may be too vague and thus contribute to respondent errors. Instead, it may be better to refer to the recall period more precisely in terms of the length of time itself, as in Aduring the past two weeks@ (Vijverberg 1991).

male off-farm earnings. There is some evidence to suggest that women may undertake an extremely diverse range of incoming earning activities, or may undertake them for shorter and interrupted periods of time, and may earn more variable returns. If women=s income sources generate very low profit margins it may be more difficult to accurately assess them (Devereux 1993). Women also tend to be involved more often in non-market production, with a predominance of in-kind costs and inflows that are more difficult to value. Because both women and men may tend to conceal income from spouses, it may be necessary to interview female and male household members separately to try to improve the accuracy of collected data (Sebstad, pers. com. 1996b).

The problematic aspects of measuring income as described above clearly pose practical difficulties for collecting high quality data on income. Approaches for measuring income changes as reviewed in this paper are assessed in terms of the extent to which they effectively overcome these constraints. Additional issues having to do with data collection methodology more generally are also considered, as discussed in the next section.

D.   CRITERIA USED TO REVIEW SELECTED APPROACHES FOR MEASURING INCOME

In addition to the specific constraints that affect measurement of income as described above, this review considers to some extent more general methodological data collection issues that affect income measurement. While not the focus of the review, these issues are briefly covered. The approaches that are reviewed in this paper include a mix of suggested variables, data collection methodologies, and data analysis techniques. Measurement of a phenomenon like income involves specification of the variable or variables for which data are to be collected, determination of an appropriate data collection methodology for gathering information on the variable, and finally techniques for analyzing the information that is collected. The overall effectiveness of a measurement approach depends on the quality and appropriateness of all of these aspects of measurement. The intended use of the data is another critical factor affecting the suitability of the measurement approach.

The extent to which a proposed variable provides a direct measure of income affects the usefulness of the indicator. Because direct data on income itself are so difficult to collect, a number of approaches have been developed that rely on use of alternative variables or proxy measures that indirectly track income. The assumptions underlying the use of an alternative or proxy measure are that it is easier to collect accurate data for the alternative than it is to collect data for income itself, and that either the alternative presents a useful but different measure of economic status, or that the proxy indicator provides a reasonably accurate sense of what is happening with regard to income. The problem is that alternative indicators do not measure the same phenomena as income does. Household assets or expenditures indicate different things about economic status than income does. Intervening factors may affect the relationship or linkage between the proxy variable and income. For example, volume of production is sometimes used as a proxy measure for enterprise income, since changes in production clearly affect changes in income. However, because enterprise income depends on other factors besides the amount of production, such as the costs of inputs and sales prices of outputs, total income for the firm may change without any change in production levels. Similarly, production levels can change without a corresponding change in income.

The data collection methodology used to gather information on the variable(s) of interest also greatly affects the quality of results. Data for a variable could be collected through a case study approach using in-depth interviews with a small, purposive sample of clients. Data for the same variable could also be collected with a brief survey questionnaire applied to a much larger random sample. The most intensive approach would involve applying a more detailed questionnaire to a large random sample. Cost constraints usually limit the size of the sample that can be selected for a survey. In addition, there is a limit to the amount of accurate information that can be collected through a

questionnaire survey, due to respondent fatigue. Cost constraints also mean that there is often a tradeoff in terms of how detailed the information can be, and the size of the sample that can be used. A case study approach may permit more detailed and accurate collection of income data than a larger random sample survey. However, because it provides information on so few respondents, the case study method generally does not produce results that can be used to estimate parameters for the entire target group under study. Another significant factor in measuring income, given the problems with recall described above, is the extent to which the data collection methodology involves repeat visits to sampled households.

The review of selected approaches presented in this paper considers both the particular key challenges described in section I.C. (**A**Difficulties Encountered in Measuring Income**@**) that specifically affect the measurement of income, as well as to a lesser extent, general data collection methodology issues. It should be noted that the paper does not undertake a completely comprehensive assessment of all aspects of each approach, but instead presents major advantages and disadvantages of each method. The relative effectiveness of the various approaches is assessed to the extent possible. The review focusses on the following information for each approach:

C   description: a brief description of the variable definition and/or approach;

C   data collection method: a brief description of the methodology most suited to gathering the information needed for the approach;

C   key strengths and weaknesses: an assessment of the principal strengths and weaknesses of the approach, (with particular attention to whether the approach successfully addresses the key challenges described in section I.C. that specifically affect the measurement of income);

C   quality of data: to the extent that evidence permits, an assessment of whether the approach can be expected to produce accurate and reliable data; and

C   feasibility: an assessment of the general feasibility of the approach in terms of time and expertise required for implementation, as well as overall relative cost.[10]

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[10]Cost considerations include human and material resources required to undertake the approach. Important elements affecting cost are the skill level required of interviewers, the number of respondents, the number of visits required for gathering information on each enterprise or household, and the amount and level of detail of information that must be collected from each respondent.

II. REVIEW OF APPROACHES TO MEASURING MICROENTERPRISE AND HOUSEHOLD INCOME

The approaches are classified into three general categories based on a broad assessment of how easy or difficult it is to implement them:

> *- simpler approaches,*
> *- middle range approaches,* and
> *- more complex approaches.*

The placement of the approaches within these categories is somewhat subjective. As explained before, some analytical techniques or variables can be applied through a variety of data collection methodologies that may range from case studies to more formal surveys. The data collection method obviously affects the overall level of complexity of the approach. Approaches based on proxy indicators or alternative measures are described separately from those using more direct measures of income. Note is also made for each approach as to whether it may be used to gather information on microenterprise income alone, only household income, or both microenterprise and household income.

A. SIMPLER APPROACHES

1. Directly Measuring or Deriving an Indicator of Income for Microenterprises or Households: Simpler Methods

The methods described in this section are simpler approaches that can be used to assess the variable of income itself, and are not based on proxy or alternative measures of income.

a. Relative value or direction of change in income for microenterprises or households

These techniques involve gathering non-quantitative data on the existence, direction or relative degree of change in income experienced by a microenterprise or a household. A question may offer three categories to describe the current status of enterprise or household income after assistance as compared to before the assistance was received: worse (or even gone bankrupt); the same; or better. This type of question produces information on both whether change has occurred and the direction of the change. An alternative style of question would be to offer the following choices for a question about whether income has changed: very significant increase, significant increase, slight increase, no change, slight decrease, significant decrease, or very significant decrease (Kumar 1989). This style of question captures whether change has occurred, the direction of change, and the relative degree of change. Another example would be to ask the respondent to select from some fixed choices the proportion of total household income that is provided by the assisted microenterprise, with such choices as: all or almost all, more than half, about half, less than half, and negligible (Daniels et al. 1995). Such categorical information can be useful for analyzing the percentages of respondents that fall into the various categories. These types of information may be collected directly from respondents using a case study or sample survey approach, from client files held by the organization implementing the microenterprise program, or from staff of the organization if they know their clients well. Cross checking by asking for the same information in different ways can help to determine whether data are accurate.

An advantage of these approaches is that it is easier to simply assess whether any change

has occurred, and if so, the direction of change, than it is to determine absolute levels of change for sensitive information like income. Using relative values permits determination of some useful trend information even when time series analysis is not possible due to lack of baseline data, involves collection of less sensitive information and as a result may produce more accurate data, and can be conducted rapidly and at lower cost. It also incorporates the respondent=s perception of the studied changes. (See especially Buchanan-Smith 1993, and Hulme and Mosley forthcoming, vol. 1.) Including questions on relative value or directional change may serve a useful purpose on a questionnaire by helping to cross check the general accuracy of more detailed quantitative data on income. Such questions may also be used to gather information on the fungibility of inflows and costs among various economic activities within the household, and to assess the effects of seasonal or other fluctuations in income.

However, information on relative changes in income is simply not as precise or useful as quantitative data on absolute levels of income. Because it is based on respondent perceptions, it provides subjective information. The subjectivity and general nature of the data provided make them less useful for comparative analysis of different businesses and households. In addition, it is not possible to determine whether the perceived change has in fact been due to a change in real income, as opposed to nominal income. Such information also will not permit analysis of the efficiency, or benefits in relation to costs, of the assistance (CARE 1992).

b. Use of existing financial records for microenterprises

Financial records may exist for microenterprises that have received or applied for loans. Information on sales, costs and/or profits may be requested at the time of application for assistance by some ME assistance organizations. In addition, the organization may have monitoring or evaluation data on assisted enterprises that have been collected at one or more points in time after receipt of loans. Such records can definitely be used to analyze the impact of assistance on microenterprise income if they exist. In addition, information on assisted enterprises may be collected from staff of the assisting agency, such as loan or extension agents who know the status of individual clients, although financial data collected this way may not be as accurate as those based on written records (Goldmark and Rosengard 1985).

The strength of such an approach is that, if before and after data already exist for most enterprises in the assistance organization=s files, no additional primary data collection effort might be needed. Using file information is much cheaper and easier than a primary data gathering effort. Even if additional data are collected from microenterprises through a survey, existing records may prove useful for cross checking purposes. For example, it would be helpful to compare income figures for the baseline period that have been collected through a survey with baseline information in the record files. If the financial records include time series information, it may be possible to assess seasonality or other income fluctuations.

A major disadvantage of this approach is that financial records or files may be non-existent, incomplete, or only exist for the pre-loan status of the microenterprise and not for the same business after the assistance was received. Definitions or the method of collection used for the records may be found unsuitable. If the file data are limited to the microenterprise for which the entrepreneur applied for the loan, there is no way to determine how changes in enterprise income affect household income (the fungibility issue). Data collected this way can only be as accurate as the information originally recorded, which may well be subject to some of the sources of error that typically affect income measurement. Also, records will only exist for microenterprises that are in the program, and not for a control group. However, a number of research designs have used enterprises that have applied for a loan but not yet received one as a control group. The assumption is that these microenterprises are similar to the

pre-loan status of businesses that have received assistance.

c. General qualitative information for microenterprises or households

Qualitative data on income can also be collected for a microenterprise or household. Examples of the types of information that can be collected include the respondent=s opinion on why microenterprise net income or its components have changed since assistance was received, and whether assistance to the microenterprise helped bring about any of the changes. Qualitative information on the respondent=s view of how any changes in microenterprise income may have affected total household income may be very useful for addressing the fungibility issue. Qualitative data permit deeper probing of the questions of why or how events have occurred. Such data can also be useful for analyzing seasonal and other fluctuations in income. Even simple information on what the sources of household income are can be extremely useful for determining how involved families are in market systems, or the extent to which they have diversified income sources as a risk controlling strategy (Little et al. 1981). Such data may be collected through intensive case study or key informant interviews, focus group discussions, or sample survey questionnaire interviews, and may be gathered through open ended questions or pre-coded, closed questions. Qualitative data can also be used to cross check the validity of quantitative data collected elsewhere.

Weaknesses of qualitative data are that they are subjective to some degree, and so may be more biased than quantitative data. Qualitative data are not as precise and cannot be aggregated or manipulated in the same way that quantitative data on absolute levels of income can be. It is more difficult to standardize qualitative data in order to compare different microenterprises or households. It can also be more expensive and time consuming to collect than might be anticipated, because obtaining non-quantitative data that are of good quality requires highly skilled interviewing techniques. (See especially Goldmark and Rosengard 1985.)

2. An Alternative Measure of the Economic Status of Households: Simpler Method

The wealth ranking technique described below can be used to assess relative overall household wealth or economic status. It provides an alternative measure to household income.

a. Wealth ranking technique to provide an alternative indication of household economic status

A wealth ranking exercise is a rapid rural appraisal (RRA) technique that provides an alternative indication of household income levels. In one variation, households in the community are grouped into several categories according to their relative wealth. The critical feature is that the sorting exercise is based on the community members= own perceptions of the relative economic status of households, since the sorting is done by either selected key informants or by the entire community.

A major advantage of the technique is that it is faster and much less costly than a household survey. It can provide interesting information on important locally perceived indicators of household economic welfare. However, this approach does not yield direct information on income of households, but instead is based on an assessment of the wealth or general economic well-being of households, which depends not only on income but also on assets. The approach also provides information on only the relative wealth positions of households within a community, and so does not produce data that allow comparisons to be made across communities. It also does not directly assess why an individual household=s status may have changed over time. Because it does not examine the relationship of the enterprise activity to any changes in household economic status, it is not effective on its own for assessing the effects on income of the fungibility of financial resources between the microenterprise and household. The approach can only be effectively applied in small communities where the informants know everyone. This tends to make it more suitable for use in rural areas than urban ones. Some advocates estimate that it can be most effectively used in communities with up to a maximum of 100 to

150 households. Finally, the wealth ranking technique is not suited to providing information on seasonality or other fluctuations in income. Despite the limitations, however, this type of approach can be extremely useful for a preliminary data gathering exercise to provide input into questionnaire design, to clarify key issues and variables, and to gain valuable insights into perceptions of the subjects regarding the determinants of wealth status. (See especially Buchanan-Smith 1993 and Ritchie 1994.)

B.   MIDDLE RANGE APPROACHES

1.   Directly Measuring or Deriving an Indicator of Income for Microenterprises or Households: Middle Range Methods

The techniques described in this section are usually used to measure net income for the microenterprise, which is sales or revenues minus costs. They may also be used to track total income for the household. These methods attempt to derive a value for the variable of income itself, and do not rely on proxy measures of income. The separate methods described below are actually different techniques or concepts that can be used within an overall approach, and can be used with various data collection methodologies, such as case studies or larger sample surveys. They can be used to collect Abefore@ and Aafter@ data, whether through a one visit or a multiple visit survey approach. The techniques are presented in approximate order from the simplest approach to collecting income data, to more complicated tools.

a.   Self-reported recalled information on total income for microenterprises or households

One approach that has been used in impact assessments of microenterprise assistance programs involves asking the respondent to recall total income for the microenterprise or household. The information requested is often net income for the enterprise, or in the case of the household, total income. Data are requested for a prior specified period of time, usually a recent, one month period (often the prior month). The respondent is not asked about inflows and costs separately, nor about the various sources of inflows or components of costs. Instead, s/he is merely asked to provide a summary income figure, either gross or net. In a one visit survey approach, an additional question can be added to gather the same data for a comparable time interval from the period before assistance was received, preferably right before the loan was received. In a repeat or multiple visit survey approach, comparable data can be gathered for successive current monthly periods to provide time series data. These types of questions can also be used in case studies.

Data on total income may be requested from the respondent with respect to a specific time period, as in a specific day, month or 12 month period. Alternatively, the respondent may be asked to provide an average daily, monthly or annual figure. As noted earlier, while information recalled for a specific short time period may be more precise or accurate, it may represent a distorted picture of the total or average situation if income fluctuates over time. Sometimes information is requested in terms of both specific and average values, which can be compared to cross check the apparent accuracy or reasonableness of the responses.

The principal strength of such an approach is that it is easier, more rapid, and less costly to collect this type of summary income data than it is to collect more detailed data on the component parts of income. The respondent is asked to provide just a summary income figure. While the cost increases with the frequency of survey visits, collecting this information through a repeat visit survey approach facilitates the assessment of seasonal or other fluctuations in income.

The major weakness of self-reported total income is that the accuracy of the data is probably not very high. There is significant evidence that self-reported income, based on recall, is systematically under reported, to such an extent that many researchers avoid using it as a study variable (Alderman 1993; Devereux 1993). Recall data are subject to various sources of error, as described above. While this basic constraint also affects more sophisticated methods that are based on recall of income data, the

more complicated approaches have techniques built into them that attempt to lessen the degree of recall error. None of the problems associated with multiple sources and components of income inflows and costs are addressed particularly well by this approach. If the respondent is asked for a net figure of microenterprise income that must be calculated from total inflows minus associated costs, the chance of estimation error is probably higher than if the component elements are asked for separately. There may be variation in the types of inflow sources and cost categories that respondents use to make their calculations of income, which limits the comparability of data across respondents. Some respondents may not even understand when information on net microenterprise income is requested, as compared to gross income (before costs). Because these simple, direct questions on income do not track down sources or uses of income, it is not really possible to assess the fungibility issue. Finally, the sensitivity of the income information requested may lead to deliberate misreporting by some respondents.

It might be possible to verify the relative accuracy of self-reported recall data that is gathered through a simple summary question on total income that is applied to a larger number of subjects as part of a sample survey. Information can also be collected through in-depth interviews with a few select enterprises or households, using detailed worksheets to actually verify all the component parts and values of income (as described under the complex approaches below). Results from the in-depth worksheets can be used to give a sense of whether the data collected from the simple questionnaire approach are within an acceptable range of accuracy.

b. Self-reported recalled data on revenues and costs for microenterprises

One of the most common techniques used in microenterprise impact studies that improves on the self-reported summary income approach described above is to ask respondents for total revenues for the enterprise separately from total associated costs. Respondents are not asked detailed questions on the various sources and components of revenues and costs, but are merely asked for total revenues, or sales, and total costs. Data are usually collected for a prior specified time period, often a recent completed month. Monthly costs are then subtracted from monthly revenues by the enumerator during the interview, or later by the analyst, to derive net resources flow, which is treated as net income, or profits. In a one visit survey, respondents can also be asked for data for a comparable time interval from the pre-loan period. In a two visit or multiple visit survey, comparable time series data can be collected for different time periods as needed.

This approach is subject to basically the same strengths and weaknesses that the self-reported summary income method is subject to. A major difference is that error associated with having the respondent calculate net microenterprise income by subtracting costs from revenues might be reduced. These calculations are now performed by the interviewer or analyst, although it does not necessarily mean that calculation errors will be eliminated. Also, by distinguishing the two components of net income, revenues and costs, it provides a potential chance to identify highly unreasonable responses or sources of error, particularly if the enumerator does the calculation for net income during the interview. The enumerator can ask the respondent if the net income figure that results from subtracting the cost from the revenue data given by the respondent seems accurate and reasonable. Negative enterprise net income flows, particularly if occurring over extended periods of time, should raise questions about the accuracy of the costs and revenues data supplied by the respondent. Enumerators can probe further to try to discern whether seemingly unlikely responses are accurate. Because respondents are asked for total revenues and total costs, there may be high variation in the component parts of each that are accounted for, which would limit the comparability of data across respondents. Requested information on revenues may be considered as sensitive by respondents, which may lead to deliberately inaccurate responses, although it may not be as sensitive as direct questions on net income or profits.

c. Dealing with seasonality and other fluctuations in income for microenterprises or households

As explained earlier, microenterprise and household income can vary substantially by season.

Many studies attempt to account for seasonal or regular fluctuations in income by using certain techniques. The essence of one approach is to collect information on what the Aseasons@ are, and when they occur. A common technique is to ask the respondent to identify which of the 12 months of a year are high income, or active sales periods for the microenterprise, and which are low income or relatively inactive months. A third category of medium sales can also be used. Then data are requested on income (or income components) for either a specific or average low season month, and also for a specific or average high season month (and medium season if used). Each figure is multiplied by the number of the months of a year cycle that are low, high (and medium) season, respectively, to estimate an annual income figure. These techniques improve the accuracy of data on income that is affected by regular seasonal or other fluctuation cycles. Data can be collected from respondents for the different seasons either in terms of actual figures for specific months, or in terms of average monthly values for the various seasons.

A less effective way of approaching the seasonality factor is to simply ensure that before and after data are collected for the same month or season each time. This does not improve the accuracy of annual estimates for income that are derived from such data, but it does help to control for some of the variation that occurs due to seasonal change in the income data.

However, these techniques cannot fully account for seasonal fluctuations in income and do not address the more irregular fluctuations that affect income flows at all. The ideal way to handle fluctuation would involve frequent, multiple visit surveys of the same set of respondents over a long period of time, such as every two weeks for a couple of years (Daniels et al. 1995). The problem is that this method is extremely time consuming and expensive, and could potentially result in respondent fatigue and high drop out rates which would bias the remaining sample.

d.   Estimation of microenterprise income through standard cost structures

This approach is based on deriving Astandard cost structures@ for a particular type of microenterprise. The standard cost structure or cost budget is essentially the average cost of producing a particular product. Once the cost structure has been estimated, information is collected from individual enterprises on the volume of their production (the number of units of outputs), the volume of some key inputs, such as the primary raw material used, or the value of sales during a specified period. Net income is then calculated based on these data.[11]

The cost structure is estimated from data gathered on one or more Atypical@ microenterprises that produce the same product. Data may be collected from such sources as staff of the assisting organization or interviews with businesses. To calculate the cost structure, information is gathered on all inputs used. The quantity and price of each input needed to produce one unit of product are assessed. From this the unit cost of the product can be computed (the cost of inputs needed to produce one unit of output). The sales price of one unit of product is also determined. The unit cost can be subtracted from the unit sales price to give the profit margin per unit. With these data, information can then be collected from a larger number of microenterprises on either the volume of a key input that they have used over a time period, the volume of output produced, or the value of sales during that period. These data for each respondent are then manipulated using information from the cost structure to derive revenues, costs, and net income for the enterprise. If the typical enterprise produces more than one product the cost structure method can still be used but is more complicated. An average gross profit margin is calculated for the

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[11]This description of the standard cost structure approach is taken from CARE=s *Small Economic Activity Development Module 1: Evaluation Guidelines for Impact Evaluation,* 1992, pp. 35-42.

business as a whole, weighted by the typical relative value of sales of the enterprise=s different products.

The advantages of this method are that it is certainly easier, more rapid, and less costly to undertake than approaches that require collection of a lot of detailed data from all respondents. While considerable effort may be required to develop the cost structures, once they are completed, data on only a very few or even one variable are needed from all of the microenterprises selected to be interviewed. It avoids the sensitivity problem of asking questions directly about income, which may improve accuracy of responses. If time series data are collected, revision of the cost structures can provide valuable information on changes in productivity over time. In addition, time series data collected through the cost structure method can also potentially be used to assess the effects of seasonality or other fluctuations in income.

However, this method was developed primarily for projects that provide standardized technical packages of assistance for a single microenterprise production activity. The principal drawback is that each cost structure is applicable only to relatively homogenous enterprises that produce a similar product. Even within enterprises that produce a similar product line, the businesses must share most other basic characteristics such as general size, market environment, use of the same technology, and so on. Further, even if more elaborate average gross profit margins are calculated to account for the production of more than one type of product by enterprises, the method involves making numerous assumptions and over-simplifications concerning the standardization of product types, cost components, and output values. So many assumptions are involved concerning the similarities of the microenterprises and the representativeness of the products and their cost structures that the likelihood of the assumptions holding is questionable. In addition, any error hidden in the cost structure affects all later estimates for all surveyed firms. If it is the only method used, the standard cost structure approach cannot determine anything about how the fungibility of capital between the microenterprise and the household affects total household income.

2. Alternative Measures of the Economic Status of Households: Middle Range Methods

Some middle range approaches to assessing household income involve the use of alternative indicators that track different dimensions of the economic status or wealth of the household. The assumptions underlying the use of an alternative measure in place of income are that the alternative provides useful information on another aspect of household economic welfare that can substitute for income data, and that it is easier to collect accurate information for the alternative than it is for income.

a. Assets as an alternative measure of household economic status

Assets is sometimes promoted as a useful alternative measure to household income in some contexts. An assumption is that because income is used to purchase assets, data on changes in assets can be used to draw some conclusions about changes in income (Kumar 1989). In addition, because assets represent sources of potential future income, assets may provide a more useful picture of the long-term economic status of the household than income does. Assets is a stock variable that reflects status at a fixed point in time. Production (microenterprise assets, agricultural assets, land), consumption (house, vehicle, furniture, personal luxury items, etc...), and liquid (financial investments, savings, cash) assets may be included in such assessments. A more meaningful measure of household welfare than assets is household net worth, defined as the value of household assets minus household liabilities (Snodgrass, pers. com. 1996b).

An advantage of using assets instead of income is that it is easier to collect data for assets. Assets are conceptually easy to deal with, and questions about them tend to be unambiguous and easy to understand. Physical assets can be visually verified, which also tends to contribute to the accuracy of responses. Asking for information on assets may be less sensitive than direct questions on income, which may also contribute to increased accuracy of respondent information. Because assets are a stock variable that pertain to a single point in time, providing information on the current status of assets need

not involve as much recall for respondents, and therefore as much associated recall error, as providing information on income flows does. In addition, assets are not as subject to the kind of frequent and seasonal fluctuations that characterize income. Finally, as mentioned above, the level of assets may actually provide more meaningful information about likely future and long-term changes in household living conditions, since productive assets can continue to be used and affect economic well-being into the future (Kumar 1989).

However, if physical assets data are to be compared across households and time, they must usually be converted to a monetary value. Determining the value of a diverse array of physical assets can be complicated, time consuming, and expensive. Different methods can be used to determine the prices for items (such as current market retail price, or respondent recall of original cost). Depreciation effects need to be accounted for to determine current value, and handling depreciation can be complicated. In addition, the very fact that assets change more slowly than income means that assets cannot capture the same sort of short-term changes in economic status that the flow variable of income can. Another disadvantage of this method is that the fungibility of monetary resources makes it difficult to draw conclusions about linkages between changes in microenterprise performance and changes in household assets, since assets may be purchased with capital coming from a number of different sources. (See Kumar 1989.)[12]

<div align="center">

b.   **Wealth scores as an alternative measure of household economic status**

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Wealth scores are based on verifying whether households own a set of selected, observable assets. This method is based on the assets approach described above, but involves developing an index of selected items and then assessing whether households own them or not. A wealth index or score is sometimes used as an alternative to income to measure household economic status. Its use as an alternative to income is based on an assumption that since income influences ownership of and access to assets, households with higher incomes will own more assets, and specifically, will own more of the consumer and other goods included in the wealth index (Buzzard and Edgcomb 1992).

A typical wealth index includes key household possessions and important characteristics of the household physical dwelling. The index can be created based on information gathered through an exploratory survey. Items are selected for inclusion in the list based on how important or useful they are in determining a household=s standard of living. Examples of items often included in such an index include: electricity, radio, television, telephone, refrigerator, bicycle, motorcycle, and car. For the dwelling, categorical choices are prepared for each physical feature to be assessed, which can include the type of floor, walls and/or ceiling. An example of categories for floor might include: earthen, simple wood plank, cement, or carpet. (See especially MACRO International Inc. 1994.) Households are interviewed and the number of each item in the index that they own is recorded. A wealth score can then be calculated for each household by weighting the items by their monetary value. It is possible to use the wealth scores to derive Gini coefficients that would facilitate cross community analysis (Little et al. 1989). The Belcher scale is a particular example of a socioeconomic index designed to be used in different country settings (Buzzard and Edgcomb 1992).

Advantages of using a wealth index are largely the same as those described for assets.

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[12]Please see Carolyn Barnes, *Assets and the Impact of Microenterprise Finance Programs,* 1996, for a more detailed discussion of assets.

The wealth index is basically a proxy indicator for full measurement of assets, since it is based on measurement of a subset of total assets. Because it only includes a subset of total assets, and may involve use of standardized values for key items in the index, it can be easier and cheaper to use than methods that involve separately valuing total household assets for each respondent. Wealth scores can be used to compare data on individual respondents across time, households, and communities. Because assets represent potential future income sources and because total assets do not fluctuate as much as income does, the wealth score may provide a more useful measure of long-term household economic well-being than income does. Assets included in the index are conceptually easy to identify and physical assets may be visually verified, which means that data may be more accurate than for income. Wealth index data may also be more accurate because they do not involve direct and sensitive questions on income. Finally, assets included in the index represent stock data that pertain to a single point in time, and thus use of the wealth index involves less recall on the part of the respondent and potentially less recall error than income data collection does. (See Little et al. 1989.)

Weaknesses of the wealth index include those described above for assets. A major weakness is that because assets change more slowly than income and do not fluctuate as much, the wealth index cannot capture short-term changes in economic well-being to the same degree that the income flow variable can. Because the wealth index provides only partial information on a subset of total assets, it may not reflect the changes that occur in a household=s standard of living as well as full assets measurement would. Creation of the index also involves assumptions about which key assets items should be included, and artificial standardization of assets types and values, which may lessen its validity as an indicator of overall household economic status. Determining the values to assign to the various assets included in the index can be complicated and time consuming. Finally, use of the wealth score does not facilitate analysis of the issue of the fungibility of capital, and the influence of the microenterprise on changes in total household economic status as measured by the assets included in the index.

A variation of the wealth index is a standard of living index. It is basically the same as a wealth index except that key consumption goods or services items like food and clothing, and even more intangible amenities like access to schools and health clinics, may be included in the index. Some argue that this type of index is superior to one based only on assets because it includes other factors that indicate the overall standard of living of the household. While this may be a plus, these additional factors are more difficult to identify and standardize, and make such indices extremely specific to local settings. In addition, access to amenities such as schools and clinics is to a large degree outside the control of households, which further complicates the analysis. (See especially Kumar 1989.)

C. MORE COMPLEX APPROACHES

1. Directly Measuring or Deriving an Indicator of Income for Microenterprises or Households: More Complex Methods

The more complicated techniques described in this section are often used to derive values for net income or profits of microenterprises, and total income for households. These methods attempt to derive a value for the variable of income itself, and do not rely on alternative measures or proxy indicators for income.

a. Detailed self-reported recalled information on components of income for microenterprises or households

Many impact assessment approaches involve collecting detailed recall data from respondents on the separate components of microenterprise or household income. Such data are often used to calculate net income or profits for the microenterprise, or total income for the household. In these approaches, detailed information is requested on all of the sources and component parts that make up income. For a microenterprise, detailed data are collected on all of the component sources and elements of revenues, and a figure for total inflows is calculated. Detailed data are also collected on all of the components of variable and fixed costs, and a total figure for costs is calculated. Net income or profit is then calculated by subtracting total costs from total inflows. For the household, detailed information on income from all sources is collected. (For farm and non-farm productive activities of the household, including microenterprises, associated fixed and variable costs are subtracted from revenues to give net income from each of these sources.) Total household income is calculated by summing data for all of the household's income sources.

This method is distinguished from the middle range approach of requesting information on total microenterprise revenues and total costs directly from the respondent by the fact that detailed information on the separate component parts of inflows and costs is collected from the respondent. Totals are derived later by the enumerator or analyst. The level of detail can vary quite a bit from use of broader categories to very detailed breakdowns of inflow and cost components. While detailed information on the separate components of net income could possibly be collected directly from financial records for a microenterprise, the approaches described in this section are applied through interviews that ask respondents to recall information. The basic approach can be used in surveys of microenterprises or of households.

In the typical microenterprise survey approach, various components of microenterprise inflows are separately enumerated, and can include sales, rents received, interest on bonds or mortgages, dividends, and other. The categories of enterprise costs can include the following: materials and supplies, tools and minor equipment, repairs and maintenance expenses, depreciation expenses, rent for premises and equipment, utilities, transport, licences, fees and taxes, cash salaries and wages paid, in kind wages or other employee benefits paid, pension contributions, loan repayments, bond and mortgage interest payments, and other.

The same technique can be applied to household income. Categories for household income sources might include income from the assisted enterprise, other enterprises, agricultural crops, livestock, rents, cash wages or salaries received (agricultural may be separated from non-agricultural earnings), in-kind work benefits, remittances received, pensions, transfers received from the government, and other. Earnings information is often collected from more than one member of the household and sometimes from all adults.

The value of in-kind flows is usually included to at least some degree in calculations of enterprise net income and household income. For example, the value of microenterprise production that is consumed by the household is usually included as revenues for the enterprise. (Note that this amount is often also counted as consumption expenditure for the household, as will be explained later.) However, there is considerable variation in the degree to which in-kind goods and services are included in estimates of income. For example, if the costs of unpaid family labor are not subtracted from the revenues of a microenterprise, the resulting microenterprise net income by definition includes returns to unpaid labor. As described earlier, more complex approaches use the concept of full income for the household, which involves imputing values for the flows resulting from the use of all household assets and endowments, such as owner occupied dwellings and even the time of household members.

In the simplest approach, the value for each inflow or cost line item or category can be asked for directly from the respondent. However, without written records, the respondent may not know the total value of each category precisely. A technique to deal with this asks instead for

quantity and price information, which are multiplied together to yield total value. An alternative for estimating business expenses is based on the frequency of expenditures. For example, for each expense category the respondent is asked: whether the business had any expenditure for that category during a specified time period; if so, how much is usually paid for it; and how often it is paid for. The total value for that expenditure category is then calculated by multiplying the frequency times the price (Vijverberg 1991).

Data for each category of inflow or cost may be collected for an average time period, such as an average month, or for a specific time period, such as the previous month. Average data for shorter time periods such as a month are usually multiplied by 12 to estimate annual figures. Data can be collected for the pre- and post- assistance periods. Information can be gathered through intensive case study interviews with a few selected respondents, or through fairly long questionnaire interviews with a larger sample of respondents in a survey.

Collection of very detailed information on the different component elements that determine net income for a microenterprise is essentially recreating a financial statement, such as an income statement. In one form of income statement, various costs are subtracted from sales revenues sequentially to eventually leave net income (Goldmark and Rosengard 1985):

SALES REVENUES - cost of goods sold   (= gross income)
                 - operating & depreciation expenses   (= operating profit)
                 - interest expenses   (= profit before taxes)
                                                                      - income tax

                 NET INCOME

If it is believed that the data contained in the income statement are accurate, several types of profitability ratios may then be calculated to further analyze the financial performance of the microenterprise. Examples of profitability ratios include gross margin (gross profits divided by sales); net margin (net profits divided by sales); return on equity (net profits divided by net worth); and return on investment or assets (net profits divided by total assets). Such ratios can be used to compare an enterprise=s performance with itself in another time period (as in pre- and post- assistance), or with a standard ratio for a sector or industry. Such ratios, with the exception of the return on investment, are not useful for comparing firms in different sectors with each other. Additional performance ratios that analyze efficiency of asset use may also be calculated. (See especially Goldmark and Rosengard 1985.)

A major advantage of this approach is that it prompts respondents on the separate component parts of total income so that items are not forgotten, thus improving the accuracy of collected data. Responses to queries about smaller, more discrete items also tend to be more accurate than for questions about aggregate costs or revenues that involve calculations by respondents. It may also be easier to identify and correct for errors that affect only some

components, since evidence suggests that recall data on different components of household income are subject to different sources of error. For the microenterprise, data on total inflows may be compared with total costs to provide a general assessment of the reasonableness or accuracy of the data collected. As another cross check, the respondent may also be asked whether the total calculated figures for inflows, costs, and net income appear reasonable, although this requires that the enumerator perform the calculations during the interview. The requested information on the separate component parts of income may be perceived as less sensitive than total income by respondents, and so may involve less deliberate misreporting.

The greatest constraints affecting these approaches may be that despite the increased level of detail, data on inflows and expenses are still subject to basic problems of recall and estimation error. Even though the financial data requested from respondents pertain to smaller, more discrete items, they may still be perceived as sensitive and may not be reported honestly. Vijverberg compared data on three different measures of enterprise income that were derived from two Living Standards Surveys household survey data sets, and found that the three measures seemed to be relatively imprecise, and did not correlate well with one another. This finding suggests that it is extremely difficult to collect accurate self-reported, recalled data on component flows of income (Vijverberg 1991).

Additional weaknesses of this approach are that reconstructing all of the component elements of income for a microenterprise or household can be extremely difficult, time consuming and costly. Some household income surveys involve interviewing all income-earning individuals within the household, which can be expensive and take a great deal of time, particularly if cultural conditions mandate having male and female interviewers available to interview men and women separately (Kumar 1989). It is particularly difficult to value flows related to any goods or services that are not sold or purchased in the market. This may include agricultural production grown and consumed by the household, wild food products, and fodder or firewood gathered by the household. Price information can be collected if a market for the item does exist, but it becomes very difficult for items that simply are not available in any market. Even when determining values for goods for which a market does exist, there are several different ways that prices can be determined (e.g. consumer/retail price vs. producer/farm gate price). Depreciation costs are also difficult to reconstruct.

Different types of microenterprise activity may require different techniques for collecting and deriving information on the components of income. For example, producer sales data may potentially be derived using average estimates of time spent working to produce key products, while sales data for traders may be more appropriately derived from information on the number of units sold (Daniels et al. 1995). In addition, variation in the types of items included within each category of inflow or expense can make these approaches very complicated in terms of calculating values and in terms of the reporting periods used. For example, sales data for an enterprise may include information on many different products that sell for very different prices. Enterprise input materials may include many different items that cost different amounts. Some studies simplify things by asking respondents to name a few key products and use this information, weighted by the portion of total sales that each item represents, to estimate total sales, even though this technique obviously introduces some error (Daniels et al. 1995). The time period that is

appropriate for reporting on different components of inflows and expenses also typically varies quite a bit. Some researchers recommend using whatever time period the enterprise usually uses for each particular item, which might be by day or month for components of sales or the cost of supplies, or by year for items like taxes paid. However, such information then needs to be converted to a common time period in order to be aggregated and analyzed (Goldmark and Rosengard 1985).

When calculating net microenterprise income, another problem can be introduced if certain input expenses reported for a particular enterprise are in fact shared with other household uses. To address this problem, it may be helpful to inquire about whether any of the expenses are shared with other household entrepreneurial or productive activities, and if so, the proportion that should be allocated to the enterprise in question (Vijverberg 1991).

Finally, the length of the interview required to get the data represents a burden to some respondents. Respondent fatigue and drop out rates may increase as a result, which can distort the accuracy of data collected and in the case of drop outs, bias the remaining sample. Some studies have found that a considerable number of microenterprises may be unwilling or unable to provide the detailed information needed to estimate revenues and costs (Daniels et al. 1995).

A technique that may improve the quality of detailed financial data collected from a microentrepreneur is to lead into the more detail oriented and sensitive monetary questions by beginning with more general, non-sensitive questions. The same information may be requested in more than one way to provide a cross check. Another technique is to conduct the interview at the place of business, since responses tend to be more truthful when there is a chance to directly verify information. Observing the actual business site gives the opportunity to examine such quantitative and qualitative aspects as the quality of goods produced, displays, inventory levels, the condition of fixed assets, and the volume of sales. While not statistically valid, these observed data can help to verify the general accuracy of responses supplied by the microentrepreneur. (See Goldmark and Rosengard 1985.)

The development of sophisticated household survey research techniques designed to assess broad policy questions related to standards of living and poverty, the effects of structural adjustment on the poor, and nutrition and food policy, has yielded valuable information for refining methods for gathering detailed data on components of household and microenterprise income. Such surveys include the World Bank≥s Living Standards Survey (LSS), the Social Dimensions of Adjustment integrated survey, and surveys sponsored by the International Food Policy Research Institute. Vijverberg compares the utility of broader household surveys to that of traditional enterprise surveys for gathering accurate information on the income of small scale, non-farm enterprises in developing countries. He describes how a typical enterprise survey that focusses on production, inputs and outputs may provide more detailed information about the components of enterprise income than a broader household survey can. A potential benefit of using a household survey approach to study microenterprise activity, however, is that it can provide valuable additional information on other factors within the household that affect enterprise income, and on the inter-relationships of the microenterprise and the broader household economic portfolio. A household survey approach can provide information on the fungibility of

capital and labor between the enterprise(s) and the household, education and employment information on family members, and risk strategies. These data can be extremely useful for developing a fuller picture of the development of the microenterprise and its relationship to the household. However, because household surveys like the LSS collect so much additional information on other aspects of household well-being, there is a limit to how detailed the enterprise section can be. (See especially Vijverberg 1991.)

b. Direct observation of detailed information on components of income for microenterprises or households

Self-reported recall data on income are subject to serious sources of error as described in previous sections. One way to avoid the weaknesses associated with respondent recall and self-reporting would be to directly observe the components of income to take measurements. This approach to data collection could potentially be used to derive values for microenterprise net income, or for household income. Some examples of research methods that rely on direct observation include labor and time use allocation studies, some types of food consumption surveys, and techniques for deriving agricultural crop yields (Little et al. 1989). Few studies have attempted to analyze the impact of microenterprise programs by using direct observation of enterprises or households on a large scale because of the extremely high cost and technical difficulty associated with such an approach. It would require highly skilled enumerators and a great deal of time. It would also be very intrusive to respondents and would be more likely to result in increased drop out rates and bias for the remaining sample. The cost production model described earlier can involve direct observation of a few selected businesses to derive the cost models. However, extending such an approach to cover all respondents in a survey would be prohibitively expensive. Nevertheless, direct observation would undoubtedly improve the accuracy of income data and potentially yield valuable information to address the question of how financial resources move among various household activities (Vijverberg 1991).

As a possibly cheaper method, respondents could be taught how to keep detailed diaries to record information on the various components of income. While this approach might be lower cost, resulting data might be subject to more errors associated with self-reporting, including calculation errors, failure to keep complete and timely records, and deliberate misreporting due to sensitivity. This approach also requires literacy to be able to fill in the records, which might eliminate some entrepreneurs or households. Finally, the great variety among economic activities would probably necessitate development of many different recording forms for respondents to use. (See Vijverberg 1991 and Leones and Rozelle 1991.)

2. Alternative or Proxy Measures for Income of Households: More Complex Methods

Two more complex approaches that involve the use of alternative variables or proxy measures that indirectly track household income are described below. The assumptions underlying the use of an alternative or proxy measure are that it is easier to collect accurate data for the alternative than it is to collect data for income itself, and that either the proxy indicator provides a reasonably accurate sense of what is happening with regard to income, or that the alternative presents a useful but different measure of economic status.

a. Expenditure as an alternative measure of household economic status

Total household expenditure is sometimes used as an alternative measure of household economic well being in place of income. Essentially, this approach looks at total household consumption expenditures on goods and services, or household resource use. Methods for gathering information on household expenditure come from the field of surveys known as household budget, consumption, or income and expenditure surveys developed for socioeconomic research on household welfare or nutrition. Household consumption refers to the total quantities of goods and services consumed or used by a household in a given period. Consumption is typically measured by total expenditures, which track the value of money, time and assets spent on both food and non-food goods and services (Levin 1991).

Categories of household expenditures might include: food, rent, transport, education, clothing, medical, household utensils, remittances paid out, taxes, and other. (As noted earlier, in a household accounting framework, the difference between household total income and total expenditures is savings.)

Expenditure is usually measured in terms of the value of the goods/services used or consumed and may be collected through different methods. Some techniques involve collecting quantity and unit price information, or deriving these, in addition to total value (quantity times price) information. In recent years many expenditure surveys have been adapted to include the value of in-kind consumption. Several methodologies for gathering consumption information are oriented toward nutrition issues, and focus largely on food consumption, which forms a major part of total expenditures for poor households. These approaches are probably not particularly applicable to the purpose of tracking the economic impact of microenterprise services.

One household expenditure survey method that does seem to be potentially relevant for a microenterprise impact study involves interviewing households and asking for recall data about consumption, working from fixed or flexible lists of categories or types of items consumed. This list recall method that is based on prompting the respondent on categories of expenditure items is methodologically somewhat similar to the approach of collecting self-reported information on the separate components of income as described above (C.1.a). A more intensive but also useful method is based on direct observation. This involves recording by a household member or by an enumerator present in the household of all consumption that occurs during a 3-7 day period. The household record method is most often used for food data, but non-food information can also be collected. (See Levin 1991.)

A major advantage of using expenditure is that it is considered to be in some ways a more reliable indicator of long run, overall household well-being than income is. Proponents argue that because expenditure represents actual consumption it gives a more accurate assessment of a household=s economic status than does income, which represents potential future consumption (Kumar 1989). Expenditure is not subject to as much seasonal and other fluctuations as income is, particularly for rural or agricultural regions. Expenditures are less variable because they are a function of the household=s ability to smooth changes in income through adjusting savings and dissavings. The permanent income hypothesis holds that people consume 100 percent of their Apermanent income.@ Some analysts argue that if this hypothesis is true, then consumption measured for a reasonable time period provides a superior measure of permanent income, and thus a better picture of lifetime income and long-term welfare, than does a measure of household income for a comparable time interval (Snodgrass, pers. com. 1996b). Evidence suggests that data for expenditures are easier to gather and are subject to less measurement error than income data are, probably because data requested for expenditures are easily understood, and because prices for most goods are either readily known or easily available locally. (See Levin 1991 and Casley and Lurey 1981.) Expenditure may also be reported more accurately than income because such information is not as sensitive (Little et al. 1989). Detailed prompting on lists of expenditure categories tends to help reduce respondent recall errors such as omission of entire categories of expense. It also helps reduce respondent inaccuracies due to estimating or calculating larger aggregate values. Techniques based on direct observation or detailed record keeping are assumed to significantly reduce recall errors and improve the accuracy of data.

However, a major weakness associated with using expenditure as a variable instead of household income is that expenditure data cannot reveal whether the resources used to purchase the goods and services that are consumed come out of increased income or out of dissaving, which of course have very different implications for household welfare. Precisely because expenditures reflect consumption smoothing behavior and do not vary as much, they cannot reveal as much as income does about changes in family welfare that are due to seasonal fluctuations or other factors (Devereux 1993). The interview method, and especially the recording data collection techniques, are intensive, costly, and fairly intrusive for households. The

household record method is extremely expensive and tends to impose on the household, since every single item used by the household during the observation period must be valued and recorded. For food consumption, this involves weighing all food items. Items consumed outside the household can be missed, and if the recording is done by an observer this may affect normal consumption habits. It is difficult to ensure a high response level since respondents may refuse to participate, or tend to experience fatigue if multiple visits are involved and drop out, which may cause the remaining sample to be biased. Special care must often be taken to build the confidence and willingness of respondents to participate in the research. Collecting and aggregating data on the multiple items of consumption can be very complicated, given variation in prices, quantities, frequencies of events, time periods and units of measurement. Estimating values for consumed goods and services that are not purchased from markets can be very difficult.   Using the household self-recording method might exclude nonliterate respondents, and might involve more recording and calculation errors. Finally, while expenditure data may be somewhat easier to recall than income data, problems associated with recall still affect accuracy. (See especially Levin 1991, Casley and Lurey 1981, Kumar 1989, and Little et al. 1989.)

b. Microenterprise income as a proxy for household income

Given the difficulty of collecting information on all sources of income within the household, one approach for an impact study might be to just measure income in the microenterprise and treat this as a proxy measure of overall household income. The microenterprise is essentially one source of total household income. Income data for the microenterprise could be collected using any of the approaches described above, but the highest quality data would be collected through the detailed recalled information approach which prompts respondents for information on the component parts of income inflows and costs. The advantage of this type of approach is that it would be easier and less costly than trying to capture total income for the household.

However, the major disadvantage is that the economic performance of the microenterprise might not be a very valid indicator of total household income. For example, because the enterprise is just one source of household income, the particular assisted enterprise might do very badly, while total household income could be relatively unaffected, or even increase, due to good performance of other income earning activities. This technique also would not facilitate analysis of the issue of fungibility of monetary resources between the microenterprise and the rest of the household portfolio. (See CARE 1992 and Bolnick 1982a.)

III. CONCLUSION

Many challenges affect the collection of accurate data on income. A variety of different techniques have been developed to measure microenterprise and household income. Some approaches are based on use of alternative variables to household income. No single approach seems able to overcome all of the constraints that affect measurement of the economic status or well-being of the microenterprise or household. While there is not enough empirical evidence available to definitively assess the relative effectiveness of the various approaches reviewed in this paper, some common themes have emerged. To at least some degree, there seems to be a trade off in terms of the relative cost in human and financial terms of implementing an approach, and the degree of detail and accuracy of data produced as a result on the other. More sophisticated and complex approaches involve collection of primary data at a more detailed level and involve more refined analysis of the primary data. These approaches are more expensive to implement, but may produce more accurate quantitative data on economic welfare. The most widely used approaches rely on recall of income and other flow data, which is universally acknowledged to involve serious constraints. Finally, numerous studies recommend using more than one approach to gather information on changes in income of microenterprises or their households. Collection of qualitative information is often recommended as a valuable way to complement and verify quantitative data.

A variety of factors will influence the final selection of the approach for measuring the impact of microenterprise services on microenterprise and household income for the AIMS core impact field assessments. The costs and benefits of collecting data on income need to be carefully assessed. Income is a powerful indicator of microenterprise and household economic status. However, there are alternative variables that are very useful for tracking different dimensions of overall household economic welfare, and that may be easier to collect data for. The relative merits of using household income as a key impact variable need to be assessed with reference to alternatives such as expenditures and assets. Important factors in weighing the possible alternatives are the relative advantages of using a flow (income, expenditures) vs. a stock variable (assets), and the extent to which the variable reveals information about current, as compared to longer term, future economic well-being of the household.

The final selection of the economic status impact variable(s) and measurement approach(es) for the AIMS core impact assessments should be based on the following criteria: the extent to which the approach can produce accurate and reliable data on income or an acceptable alternative economic impact indicator, the relative cost of the approach, and the extent to which the method is compatible with the data collection approaches recommended for the other critical impact variables to be used in the AIMS core impact assessments.

APPENDIX A

Summary Table on Approaches for Measuring Microenterprise and Household Income

APPROACHES FOR MEASURING MICROENTERPRISE AND HOUSEHOLD INCOME				
general level of difficulty	**approach**	**useful for microenterprise and/or household income**	**advantages**	
Simpler	Relative Value or Direction of Change	Microenterprise or Household	$ Rapid $ Less costly $ Asks for less sensitive information on income and thus may produce more accurate data $ Useful for information on trends even when baseline data are missing $ Based on respondent perceptions of income changes $ Useful in questionnaire to cross check detailed quantitative data on income $ Can provide some information on fungibility $ May be used to assess seasonality or other income fluctuations	$ Pro relativ $ Dat $ Of analy micro $ Ca the cl nomi $ Ca efficie progr costs
Simpler	Existing Financial Records	Microenterprise	$ Rapid $ Less costly $ Useful for cross checking with data collected through survey $ May use pre-loan application data for non-assisted firms as control group $ May be used to assess seasonality or other income fluctuations	$ Dat only micro $ Dat for fil flawe other $ Do
Simpler	General Qualitative Information	Microenterprise or Household	$ Useful to probe how/why questions regarding changes in income $ Can provide very useful information to assess fungibility $ Useful for cross checking validity of quantitative income data $ May be used to assess seasonality or other income fluctuations	$ Qua subje than incon $ Qua preci stanc differe $ Re interv $ Ma and t depe subje

Simpler	Wealth Ranking	Household	$ Rapid $ Less costly $ Based on beneficiary perceptions of household economic status $ Useful for pretest and to provide input into questionnaire and research design	$ Pro relativ house $ Not chang time $ Ca comm $ Onl rural $ Doe $ Doe or oth
Middle Range	Self-reported Recalled Information on Total Income	Microenterprise or Household	$ Relatively rapid $ Less costly $ Can collect data for specific time periods as well as average figures for longer periods to cross check validity of responses $ May assess general accuracy of data by comparing them with more in-depth income information from a few case studies $ When collected in a repeat visit survey approach, may provide useful information on seasonality or other income fluctuations	$ Dat to hig recall $ Dar defini used which $ Sen reque misre $ Doe
Middle Range	Self-reported Recalled Data on Revenues and Costs	Microenterprise	$ Relatively rapid $ Less costly $ May reduce errors from respondent calculation of inflows minus costs $ May assess accuracy by comparing inflows with associated costs, and by comparing calculated net income with respondent=s perception of net income $ Can collect data for specific time periods as well as average figures for longer periods to cross check validity of responses $ May assess general accuracy of data by comparing them with more in-depth income information from a few case studies $ When collected in a repeat visit survey approach, may provide useful information on seasonality or other income fluctuations	$ Dat to hig recall $ Dar compo costs respor compa $ Sen reque misre althou costs sensit (or pr $ Doe

Middle Range	Techniques for Dealing with Seasonality and Other Fluctuations: A) Collect before and after income data during the same season B) Collect income data on separate seasons and then aggregate to estimate annual income C) Multiple, frequent survey visits to collect income data	Microenterprise or Household	A) Controls for some seasonal variation in income B) Accounts for some of the effects of seasonal or other regular cyclical fluctuations in income C) Accounts for both seasonal and irregular income fluctuations	A) De on wh regula A) an irregu C) Ve expen increa highe bias re
Middle Range	Standard Cost Structures	Microenterprise	$ Relatively rapid $ Relatively inexpensive $ Avoids asking sensitive direct questions on income and thus may produce more accurate data $ Provides information on productivity $ When used for measurements over time, may be useful to assess the effects of seasonality or other fluctuations in income	$ May homo produ $ Ass busine of pro struct $ Inv standa produ and o $ Doe
Middle Range	Assets	Household	$ Because assets represent potential future income sources and do not fluctuate as much, may provide a more useful measure of long-term household economic status than income does $ Assets are conceptually easy to understand and physical assets may be visually verified, which means that data may be more accurate than for income $ Avoids asking sensitive direct questions on income and thus may produce more accurate data $ Assets are a stock variable pertaining to a single point in time - collection of information on the current status of assets does not involve as much recall and so is less subject to recall error than income data are $ Assets data are generally easier to collect than income data	$ Ass other house well a $ Val assets consu $ Doe

Middle Range	Wealth Scores	Household	$ Easier and cheaper than collecting data for full assets, detailed components of income, and expenditures approaches $ Wealth scores can be calculated for respondent households to permit comparison across time, households and communities $ Because assets represent potential future income and do not fluctuate as much, may provide a more useful measure of long-term household economic status than income does $ Assets included in the index are easy to understand and physical assets may be visually verified, which means that data may be more accurate than for income $ Requested data are less sensitive and so may be reported more accurately than income data $ Assets are a stock variable pertaining to a single point in time - collection of information on the current status of assets included in the index does not involve as much recall and so is less subject to recall error than income data are	$ Is a provic inforr nume standა their ᵥ validi house $ Val assets compl $ Ass other house well a $ Do₀

More Complex	Detailed Self-reported Recalled Information on Components of Income	Microenterprise or Household	$ Detailed household income data may provide some information useful for assessing the fungibility issue and how microenterprise income affects total household income $ Detailed prompting on separate components reduces respondent recall errors of omission of entire components of inflows (or costs), and respondent inaccuracies in estimating or calculating larger aggregates $ May be easier to identify and correct for sources of error affecting different components $ Asking about discrete small components of income may be less sensitive than asking for total income, and so may improve accuracy of reported data $ May assess accuracy by comparing calculated total income with respondent=s perception of total income, and for microenterprise, by comparing total inflows with total costs $ Data may be used to calculate profitability ratios or other performance measures to further assess the financial status of the microenterprise $ When collected in a repeat visit survey approach, may provide useful information on seasonality or other income fluctuations	$ Dat signif errors $ Dat sensit could misre $ Tim questi respor out ra accura remai $ Hig house for se and fe may d $ Ider in-kir is diff $ Dif neede micro $ Mu prices events measu and c and d
More Complex	Direct Observation of Detailed Information on Components of Income	Microenterprise or Household	$ Expected greatly improved accuracy of data (avoids recall errors) $ Potentially extremely useful to assess fungibility $ Potentially very useful to assess seasonality or other income fluctuations $ Use of respondent diaries would be lower cost than direct observation	$ Ext $ Pro $ Ver and n rates $ Res exclu might record as we of sen respor

| More Complex | Expenditure | Household | $ Expenditure may be a better indicator of overall household economic well-being than income because it represents actual, not potential future, consumption. Also, expenditure is not subject to as much seasonal or other fluctuation as income is because it reflects consumption smoothing through adjusting savings and dissavings.
 $ Expenditure data tend to be easier to gather and may be subject to less recall and measurement error than income data are
 $ Expenditure may be reported more accurately than income because it is less sensitive
 $ Detailed prompting on fixed or flexible lists of expenditure categories reduces respondent recall errors such as omission of entire categories, as well as respondent inaccuracies in estimating or calculating larger aggregates
 $ Direct observation, or detailed recording by the household, is expected to significantly improve accuracy of data (avoids recall errors) | $ Bec
consu
reveal
seasor
house
incom
the ex
consu
incom
$ Dat
signif
$ Tim
in inc
and h
can bi
$ Hig
$ Mu
freque
and u
make
detaile
$ Ider
in-kir
$ Dir
methc
costly
intrus
$ Usir
techni
memb
would
subjec
recorc
$ Doe |
| More Complex | Microenterprise Income | Household | $ Less costly and time consuming than collecting detailed data on all of the components of income in the entire household portfolio
 $ When collected in a repeat visit survey approach, may provide useful information on seasonality or other income fluctuations | $ Mic
proxy
(micrc
source
The e
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accura
house
$ Doe |

APPENDIX B

PRELIMINARY HYPOTHESES FOR THE AIMS CORE IMPACT ASSESSMENTS

A set of preliminary hypotheses was developed as part of the conceptual framework and strategy papers for the AIMS Project core impact assessments. The hypotheses concern the impact of microenterprise services on microenterprises, their households, and individuals within the household.[13]

Household and individual level hypotheses

H-1: Participation in microenterprise services leads to an increase in household income.

H-2: Participation in microenterprise services leads to increased diversification in the set of income-producing activities among the poorer clientele.

H-3: Participation in microenterprise services leads to an increase in net worth of the household
(gross value of financial and physical assets minus liabilities).

H-4 Participation in microenterprise services leads to an increase in cash expenditures on ...
        .... the education and training household members.
        .... food (define up to six food categories).

H-5 Participation in microenterprise services reduces the magnitude of negative shocks to household income or assets.

I-1: Participation in microenterprise services leads to increased control by the client over resources within the household.

Enterprise level hypotheses

E-1: Participation in microenterprise services leads to increased net cash flow from microenterprise activities.

E-2: Participation in microenterprise services leads to increased net worth of microenterprises

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[13] This list of preliminary hypotheses is drawn from the following internal working document that was prepared by Carolyn Barnes and Jennefer Sebstad for the AIMS Project: AScope of Work: AIMS Focused Field Research@, Final, September 16, 1996.

(gross assets minus liabilities) through...
... increased current assets.
... increased fixed assets (especially with repeat borrowing).
... improved enterprise-related debt terms and options.

E-3: Participation in microenterprise services leads to increases in labor productivity.

BIBLIOGRAPHY

Alderman, Harold. 1993. A Obtaining Useful Data on Household Incomes from Surveys.@ In *Data Needs for Food Policy in Developing Countries: New Directions for Household Surveys,* edited by Joachim von Braun and Detlev Puetz, 193-201. Washington, DC: International Food Policy Research Institute.

Barnes, Carolyn. 1996. *Assets and the Impact of Microenterprise Finance Programs.* Paper submitted to USAID by the AIMS Project, Washington, D.C.: Management Systems International.

Barnes, Carolyn and Jennefer Sebstad. 1996. A Scope of Work: AIMS Focused Field Research.@ Final version. Internal working document prepared for the AIMS Project.

Bolnick, Bruce R. 1982a. A Analytical Methodology.@ Impact Study Working Paper No. 1. Prepared for evaluation of KIK/KMKP credit program, Indonesia.

Bolnick, Bruce R. 1982b. A Specification of Data Required for Impact Study.@ Impact Study Working Paper No. 2. Prepared for evaluation of KIK/KMKP credit program, Indonesia.

Broca, Sumiter Singh. 1995. *Credit Constraints and Their Impact on Risk Bearing and Precautionary Saving: A Case Study from Rural Pakistan.* Dissertation submitted to The John Hopkins University. Baltimore, MD.

Buchanan-Smith, Margaret. 1993. A Innovations Toward Rapid and Participatory Rural Appraisal.@ In *Data Needs for Food Policy in Developing Countries: New Directions for Household Surveys,* edited by Joachim von Braun and Detlev Puetz, 156-167. Washington, DC: International Food Policy Research Institute.

Buzzard, Shirley and Elaine Edgcomb, editors. 1987. *Monitoring and Evaluating Small Business Projects: A Step by Step Guide for Private Development Organizations.* By Members of the Small Enterprise Evaluation Project. Private Agencies Collaborating Together. Madison, CT: Editorial PKG.

CARE. 1992. *Small Economic Activity Development Module One: Evaluation Guidelines for Impact Evaluation.* Atlanta, GA: CARE International.

Casley, D.J. and D.A. Lury. 1981. *Data Collection in Developing Countries.* Oxford: Clarendon Press.

Chen, Marty and Elizabeth Dunn. 1996. *Household Economic Portfolios*. Paper submitted to USAID by the AIMS Project, Washington, D.C.: Management Systems International.

Creevey, Lucy E., Koumakh Ndour and Abdourahmane Thiam. 1995. *Evaluation of the Impacts of PRIDE/VITA (The Guinea Rural Enterprise Development Project)*. GEMINI Technical Report No. 94. Bethesda, MD: Development Alternatives, Inc.

Daniels, Lisa, Donald C. Mead, and Muli Musinga. 1995. *Employment and Income in Micro and Small Enterprises in Kenya: Results of a 1995 Survey*. GEMINI Technical Report No. 92. Bethesda, MD: Development Alternatives, Inc.

Devereux, Stephen. 1993. A Collection of Production and Income Data: A Commentary.@ In *Data Needs for Food Policy in Developing Countries: New Directions for Household Surveys,* edited by Joachim von Braun and Detlev Puetz, 202-206. Washington, DC: International Food Policy Research Institute.

Dunn, Elizabeth. 1994. *Analytical Tools Manual for Rural Economic Programming (REP)*. Atlanta, GA: CARE International.

Dunn, Elizabeth. 1996. AHypotheses for the Core Impact Assessments.@ Draft. Internal working document prepared for the AIMS Project.

Feinstein, Osvaldo. 1993. A Surveys at Household Level for Monitoring and Evaluation.@ In *Data Needs for Food Policy in Developing Countries: New Directions for Household Surveys,* edited by Joachim von Braun and Detlev Puetz, 117-122. Washington, DC: International Food Policy Research Institute.

Goldmark, Susan and Jay Rosengard. 1985. *A Manual for Evaluating Small-Scale Enterprise Development Projects*. AID Program Design and Evaluations Methods Report No. 6. Washington, DC: USAID.

Grootaert, Christiaan. 1982. *The Conceptual Basis of Measures of Household Welfare and Their Implied Survey Data Requirements.* Living Standards Measurement Study Working Paper No. 19. Washington, DC: The World Bank.

Hulme, David and Richard Montgomery. Forthcoming. AMutual Finance and the Poor: The Federation of Thrift and Credit Cooperatives (SANASA) in Sri Lanka.@ In *Finance Against Poverty: Effective Institutions for Lending to Small Farmers and Micro-Enterprises in Developing Countries. Volume 2: Country Case Studies,* edited by David Hulme and Paul Mosley, 228-315. London: Routledge.

Hulme, David and Paul Mosley. Forthcoming. *Finance Against Poverty: Effective Institutions*

for Lending to Small Farmers and Micro-Enterprises in Developing Countries. Volume 1: Analysis and Recommendations. London: Routledge.

Johnson, Martin, Andrew D. McKay and Jeffery I. Round. 1990. *Income and Expenditure in a System of Household Accounts: Concepts and Estimation.* Social Dimensions of Adjustment in Sub-Saharan Africa, Working Paper No. 10. Washington, DC: The World Bank.

Kumar, Krishna. 1989. *Indicators for Measuring Changes in Income, Food Availability and Consumption, and the Natural Resource Base.* AID Program Design and Evaluation Methodology No. 12. Washington, DC: USAID.

Leones, Julie P. and Scott Rozelle. 1991. *Rural Household Data Collection in Developing Countries: Designing Instruments and Methods for Collecting Off-Farm Income Data.* Working Papers in Agricultural Economics, No. 91-18. Department of Agricultural Economics and Cornell Food and Nutrition Policy Program (CFNPP). Washington, DC: CFNPP Publications Department.

Levin, Carol. 1991. *Rural Household Data Collection in Developing Countries: Designing Instruments and Methods for Collecting Consumption and Expenditure Data.* Working Papers in Agricultural Economics, No. 91-14. Department of Agricultural Economics and Cornell Food and Nutrition Policy Program (CFNPP). Washington, DC: CFNPP Publications Department.

Levin, Carol, Katherine Ralston and Lawrence J. Haddad. 1993. AIntrahousehold-Related Policy Research: Implications for data Collection.@ In *Data Needs for Food Policy in Developing Countries: New Directions for Household Surveys,* edited by Joachim von Braun and Detlev Puetz, 246-257. Washington, DC: International Food Policy Research Institute.

Liedholm, Carl. 1991. *Data Collection Strategies for Small-Scale Industry Surveys.* GEMINI Working Paper No. 11. Bethesda, MD: Development Alternatives, Inc.

Little, Peter D., Angelique Haugerud, Michael L. Burton, and Gerald Spittle. 1989. *A Report on Methodologies for Survey Research.* Prepared for the Regional Economic Development Services Office, USAID, Nairobi, Kenya. Binghamton, NY: Institute for Development Anthropology.

Low, Jan. 1993. AStrengths and Weaknesses of Different Household Survey Approaches for Food Policy Design.@ In *Data Needs for Food Policy in Developing Countries: New Directions for Household Surveys,* edited by Joachim von Braun and Detlev Puetz, 168-170. Washington, DC: International Food Policy Research Institute.

MACRO International, Inc. 1994. *Model AB@ Questionnaire for Low Contraceptive Prevalence Countries with Commentary.* Demographic and Health Surveys - Phase III, DHS-III Basic Documentation Number 2. Revision 5. Calverton, MD: MACRO International,

Inc.

Microenterprise Impact Assessment Consortium. 1996. ACore Impact Assessment Strategy for the Microenterprise Impact Project.@ Internal working paper submitted to USAID by the AIMS Project, Washington, D.C.: Management Systems International.

Montgomery, Richard, Debapriya Bhattacharya and David Hulme. Forthcoming. ACredit for the Poor in Bangladesh: The BRAC Rural Development Programme and the Government Thana Resource Development and Employment Programme.@ In *Finance Against Poverty: Effective Institutions for Lending to Small Farmers and Micro-Enterprises in Developing Countries. Volume 2: Country Case Studies,* edited by David Hulme and Paul Mosley, 123-227. London: Routledge.

Nelson, Eric R. and Bruce R. Bolnick. 1986. *Survey Methods for Assessing Small Credit Programs: Evaluating the Economic Impact of KIK/KMKP Credits.* Paper presented at Conference on Financial Research in Indonesia, sponsored by Directorate of Financial Institutions, Ministry of Finance and Harvard Institute for International Development.

Ritchie, Anne. 1994. *Evaluation of the Economic and Social Benefits of Income Generation Projects.* Workshop Report. Workshop organized by CARE Bangladesh=s Small Economic Activity Development Sector. Dhaka, Bangladesh.

Romanoff, Steven and Eric Hyman. 1994. *Impact Monitoring System Report for 1993.* Washington, DC: Appropriate Technology International.

Sebstad, Jennefer and Gregory Chen. 1996. *Overview of Studies on the Impact of Microenterprise Credit.* Paper submitted to USAID by the AIMS Project, Washington, D.C.: Management Systems International.

Sebstad, Jennefer, Catherine Neill, Carolyn Barnes with Gregory Chen. 1995. *Assessing the Impacts of Microenterprise Interventions: A Framework for Analysis.* USAID Managing for Results, Working Paper No. 7, Washington, DC: USAID.

Sebstad, Jennefer and Martin Walsh. 1991. *Microenterprise Credit and Its Effects in Kenya: An Exploratory Study.* Final Report prepared for USAID AFR/MDI and S&T/WID. Washington, DC: Coopers and Lybrand.

Vijverberg, Wim P.M. 1991. *Measuring Income from Family Enterprises with Household Surveys.* Living Standards Measurement Study, Working Paper No. 84. Washington, DC: The World Bank.

Zeller, Manfred, Akhter Ahmed, Suresh Babu, Sumiter Broca, Aliou Diagne, and Manohar Sharma. 1996. *Rural Financial Policies for Food Security of the Poor: Methodologies for a Multicountry Research Project.* Food Consumption and Nutrition Division Discussion Paper No. 11. Washington, DC: International Food Policy Research Institute.

PERSONAL COMMUNICATION

Dunn, Elizabeth. E-mail, April 29, 1996a, and telephone conversation, August 16, 1996b.

Sebstad, Jennefer. E-mails, March 21, 1996a, and June 5, 1996b.

Snodgrass, Donald. Telephone conversation, July 1996a, and fax, September 9, 1996b.